Local Work Instruction:
Transocean Polar Pioneer: Non-contact Cooling Water Discharge for Rig Brake and Mud Cooler – D009

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Scope:		**Revised By:**	D. Johnson
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SCOPE:

This document offers work level instructions for the sampling, testing, and reporting associated with the discharge of non-contact cooling and the general seawater service line water while operating under the guidelines of the NPDES General Permit (AKG-28-8100), on-board the Transocean *Polar Pioneer*. Non-contact cooling water consists of seawater used to cool closed loop, secondary freshwater systems through heat exchangers. No biocides or chemicals will be added to the saltwater system. No intermixing of fresh and salt water occurs between the primary and secondary loops.

In addition, independent digital flow meters along with temperature sensors have been installed on several discharge lines to monitor flow and temperature

RESPONSIBILITY:

The M-I SWACO NPDES Compliance Specialist is responsible for ensuring that this LWI has been provided to each person involved with this task.

During active drilling operations, the M-I SWACO NPDES Compliance Specialist is responsible for performing the following tasks for each of the non-contact cooling water discharges:

- Document the flow volume from the effluent flow meters.
- Perform and document visual sheen tests for each outfall.
- Temperature will be monitored continuously and documented for non-contact cooling water (009).
- Four times per well, at intervals designated to be representative of the discharge's toxicity, a sample will be collected for initial toxicity screening. Each sample will be collected at a time period selected to reflect discharge processes and operational processes. Collect and document initial toxicity screening samples.
- WET testing will be required if either of the following occurs: 1) Initial rapid toxicity screening threshold criteria are exceeded OR 2) discharge exceeds 10,000 gallons during any 24-hr period and chemicals are added to the system. If WET testing is required, collect and document three samples from the effluent on an every-other-day basis in accordance. Package samples for transport to the fixed analytical laboratory.
- Collect and document samples for pH analysis.

1.0 References:

1.0 NPDES GP AKG-28-8100:

1.0.1 Table 10 – *Effluent Limitations and Monitoring Requirements for Non-contact Cooling Water (D009).*

1.1 Figure – Discharge Points (Harris Pye).

1.2 Transocean Polar Pioneer Best Management Practices Plan, April 2015.

1.3 Transocean Polar Pioneer Quality Assurance Project Plan, April 2015.

1.4 M-I SWACO (or misc.) SOP's 1006, 3005, 2001, 2012, LWI-001, ENV001.01, TOX045.02, TOX002.05, TOX012.06, TOX014B.02, TOX043.06.

1.5 Shell Exploration & Production Company Alaska Venture 2015 Polar Pioneer Waste Management Plan.

2.0 General Requirements:

2.0 The M-I SWACO NPDES Compliance Specialist is responsible for discharge sampling, testing, and reporting to Shell Environmental Department while operating under NPDES GP AKG-28-8100.

2.1 Shell Environmental Department is responsible for maintaining the Discharge Monitoring Report (netDMR) and submitting to EPA all discharges sampling, testing and results on a monthly basis.

2.2 Transocean is responsible for operating and repairing all equipment associated with this discharge

3.0 Safety Guidelines:

3.0 Before any operations can take place, all personnel involved in this process must complete the following details if required by operator or contractor:

3.0.1 The Pre-Tour Meeting is when daily activities are discussed.

3.0.2 Written Risk Assessment with all involved parties present.

3.0.3 After action review of Risk Assessment.

3.0.4 Transocean Permit to Work.

4.0 Discharge/Task Description:

4.0 Raw seawater is withdrawn using any of the four suction pumps located in the starboard aft and port aft pontoons. This seawater is distributed around the rig through an open loop system (General Seawater Service Line, [GSSL]) that provides primary water to the secondary systems. The pumps are operated on a pressure demand basis such that pump utilization is based on system demand requirements with individual pumps operating in unison and/or independently based on overall demand requirements.

4.1 The seawater on this branch of the GSSL goes directly to two rig brake heat exchangers and the mud cooler. The seawater is used to cool the heat exchanger system. The rig brake cooling loop uses freshwater, in a closed loop, to cool the rig brake after passing through the heat exchanger.

4.2 The mud cooler is also designed in a similar fashion where the saltwater passes through a heat exchanger used to lower the temperature of the mud in the eventuality that permafrost is being drilled into.

4.3 Once the effluent passes through the rig brake heat exchangers and the mud cooler, the effluent flows to a common flow line that discharges to receiving waters via the mud shunt line attached to the Port #2 Column.

4.4 At a common point on this branch of the GSSL, temperature is measured and logged hourly by a fixed sensor. This data is reviewed daily, with high and low temperatures being recorded on the NPDES Master Spreadsheet. In the event the temperature sensor fails, the M-I SWACO's NPDES Compliance Specialist will collect a sample and manually measure the temperature every 6 hours.

4.5 At the same common point of the GSSL, a flow meter is attached to the discharge line that measures the rate of flow (gpm) in real time and records the information in a data logger located adjacent to the meter. The rate of flow can be viewed from the data logger. In the event of flow meter or data logger failure, volume calculations will be estimated on historical data. Total gallons discharged will be recorded on the NPDES Master Spreadsheet on a daily basis for netDMR reporting.

4.6 Free oil testing using the visual sheen method must be performed daily while operating under the NPDES GP. Tests must be performed during daylight hours while the receiving water can be seen. Visual observations are recorded on the NPDES Master Spreadsheet.

4.7 A sample port is installed in the same common location of the two sensors and is located in the reserve pit room.

4.8 A sample can be collected for both discharges on this particular branch of the GSSL based on location of this sample port. Samples needed for analytical testing (Initial toxicity, pH, and WET) will be collected at this location.

4.9 The M-I SWACO NPDES Compliance Specialist will immediately report to Shell Environmental Department, at 907-830-7435, of any upset condition.

5.0 Sample Requirements for Non-contact Cooling Water (D009)

Effluent Parameter	Effluent Limitations		Monitoring Requirements	
	Average Monthly Limit	Maximum Daily Limit	Sample Frequency	Sample Type
pH	Report (s.u.)		Monthly	Grab
Free oil	No discharge		Daily	Visual
Total Volume	Report (gal)		Daily	Flow Meter
Temperature	Report (°F)		Continuous	Measure
WET	Report (TU_c)		Use rapid toxicity test 4X/well as initial screen. WET not needed if initial passes.	Collect grab sample for analysis if results show potential toxicity or 1X/well if discharge >10,000 gal during 24 hr and if chemicals are added to the system.

6.0 Clean-up:

6.0 Follow housekeeping practices.

7.0 Contingency:

7.0 Notify the Transocean Marine Department and Maintenance Department if any equipment isn't working properly.

Revision Log:

Date:	Document History:	Revised/reviewed by:	Location:
